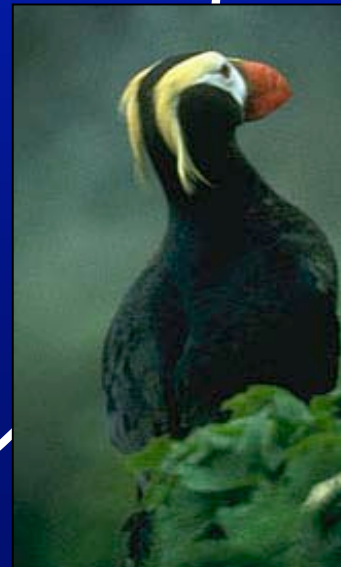
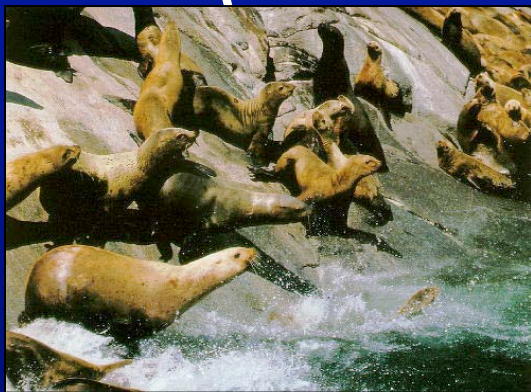


Protecting the Pacific



Our Oceans

- 70% of the planet is covered by oceans
- >50% oxygen, weather, feed billions of people, and provide jobs

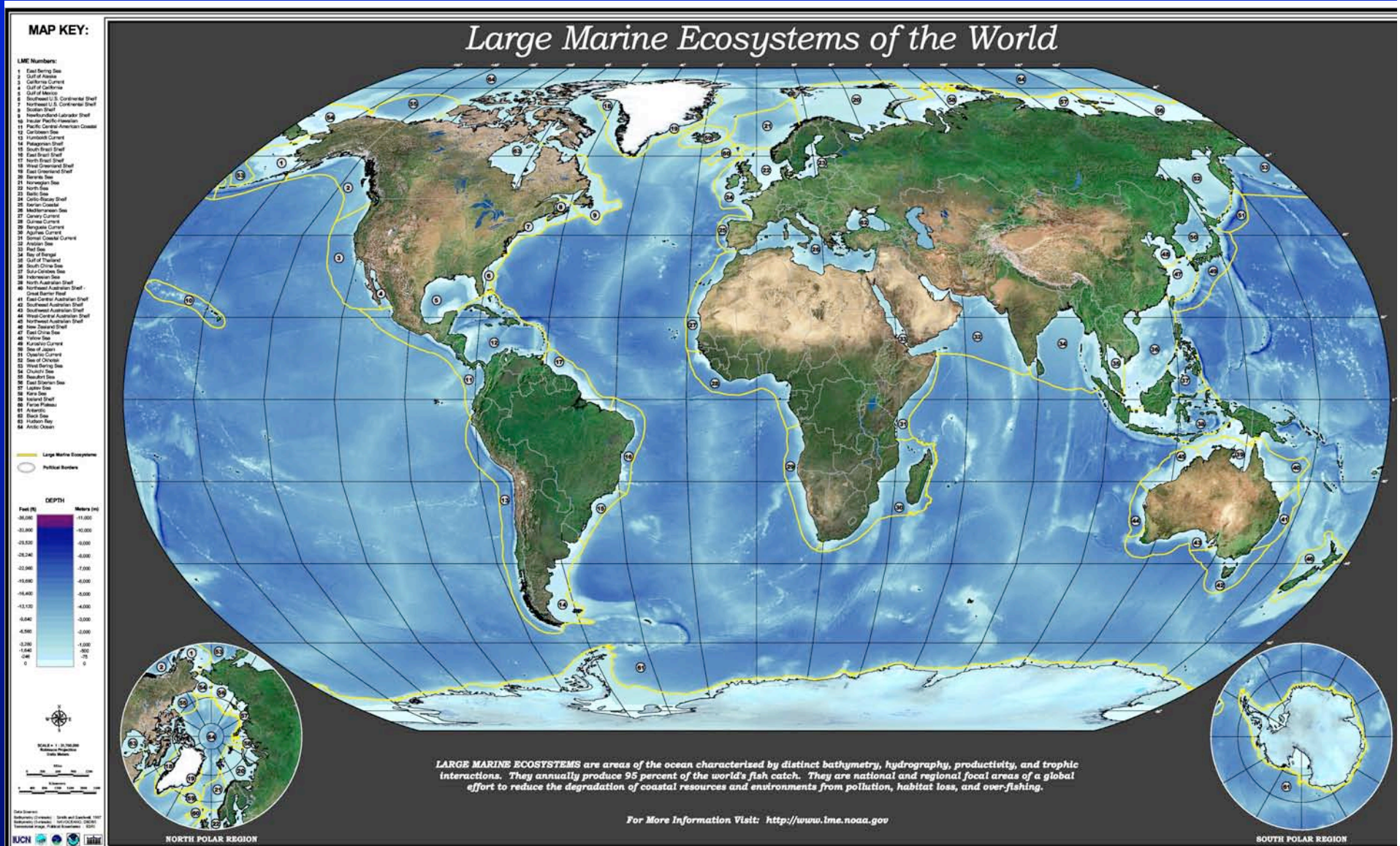
- Essential to:

- Economy
- Environment
- Culture

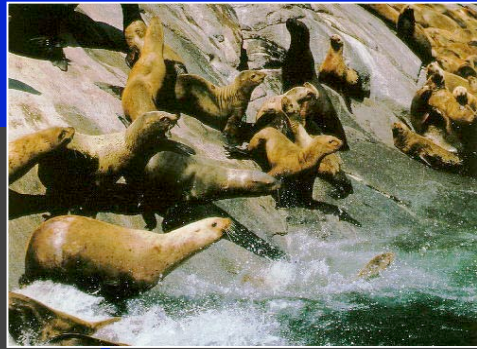


Large Marine Ecosystems of the World

(64 total, 10 in US)



Large Marine Ecosystems of the Pacific



Beaufort Sea

Chukchi Sea

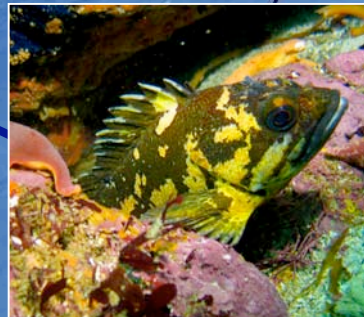
Bering Sea/ Aleutians

Gulf of Alaska



California Current

Western Pac. Hawaiian Islands



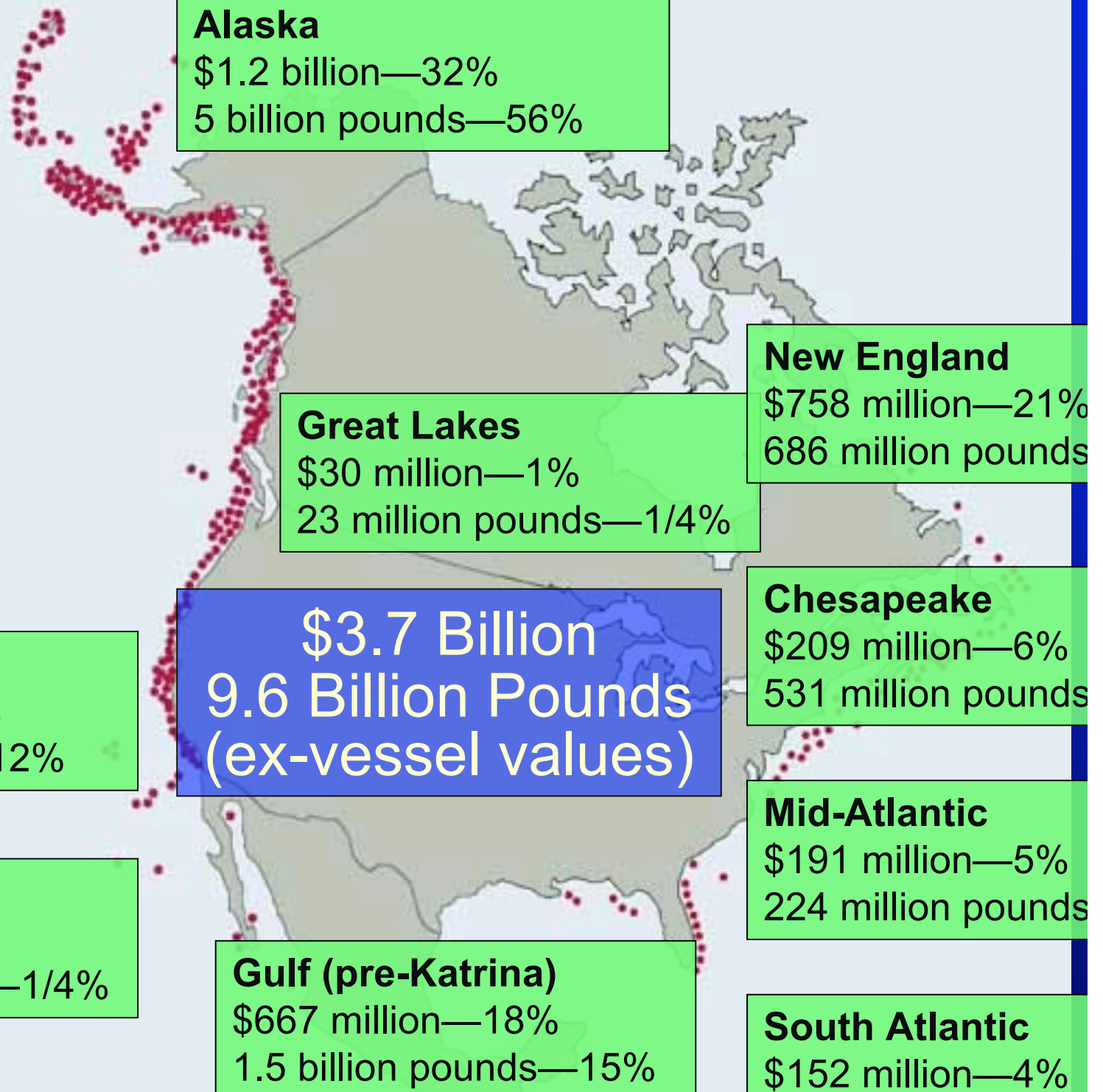
5

6

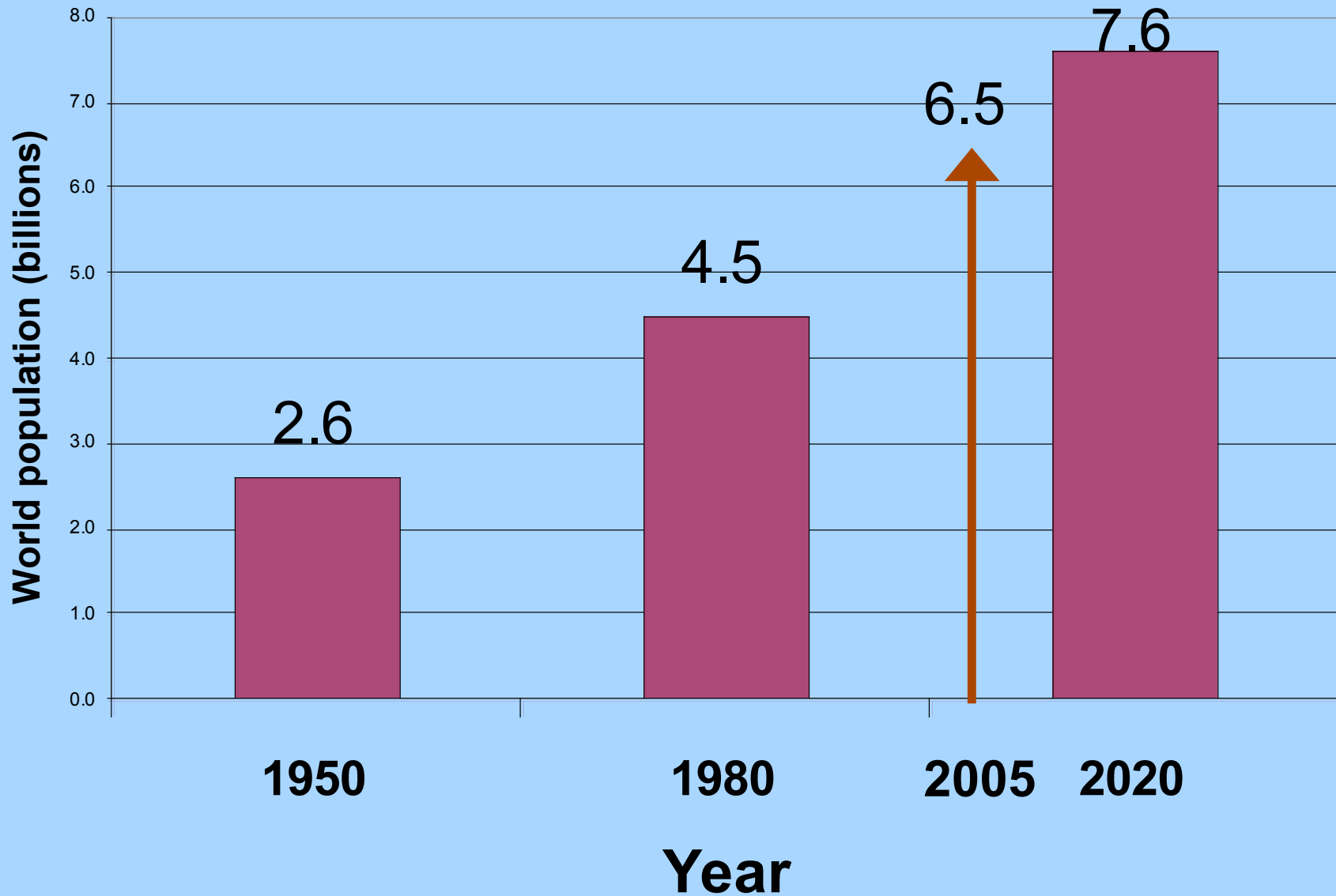
Alaska



U.S. Fishery Values 2004



World Population

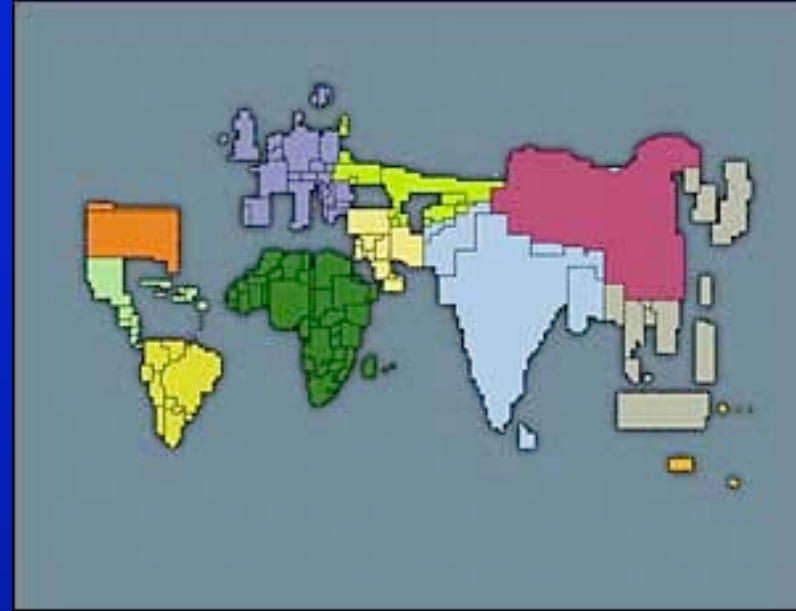


A Look At the World

- Greenhouse gases—CO₂, methane, nitrous oxide
- US and Canada are 5% of world population yet 26% of CO₂ emissions



World's relative geography



World's population



Economics and Demand

World Fish Consumption

About 56% of the world's population derives at least 20% of its animal protein intake from fish, and some small island states depend on fish almost exclusively.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

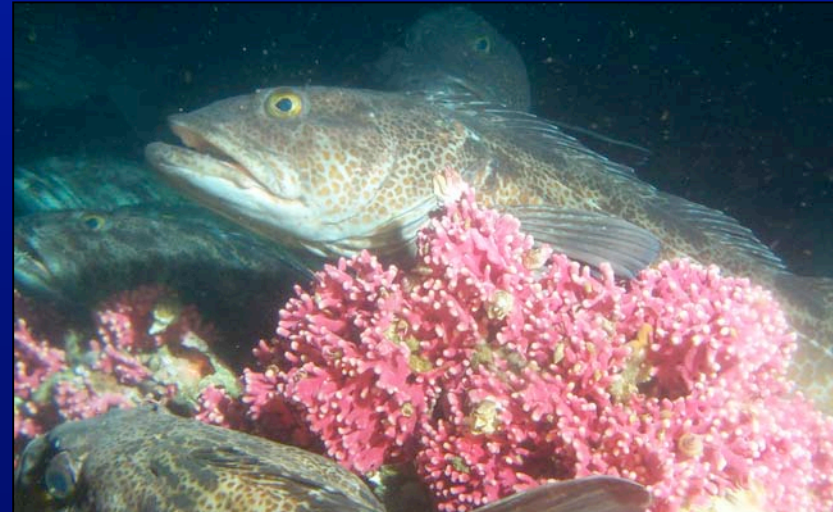
Economy

\$75 Billion for commercial fisheries

Sustainable Healthy Ecosystems

- U.S. Commission on Ocean Policy
- Pew Oceans Commission

Sustainable existence relies on the science and ingenuity of developing efficient methods of harvest and production that are conducted without destruction of the habitat or threat to environment and ecosystem diversity.



Pillars for Protection and Restoration Ocean Policy

SCIENCE



- Habitat Protection
- Fishing Sustainably
- Pollution Reduction
- Coastal Development Limited



MANAGEMENT

PUBLIC INVOLVEMENT



Alaska's Ocean Threats

➤ Habitat Destruction

- Bottom trawling
- Oil Spills



➤ Fishing Unsustainable

- Bycatch
- Rockfish
- Sea Lions
- Northern Fur Seals



➤ Pollution

- POPs
- Mercury

■ Plastics

➤ Coastal Development

- Coastal Zone Management
- OCS

Aleutian Islands

Alaska's Ocean Treasure

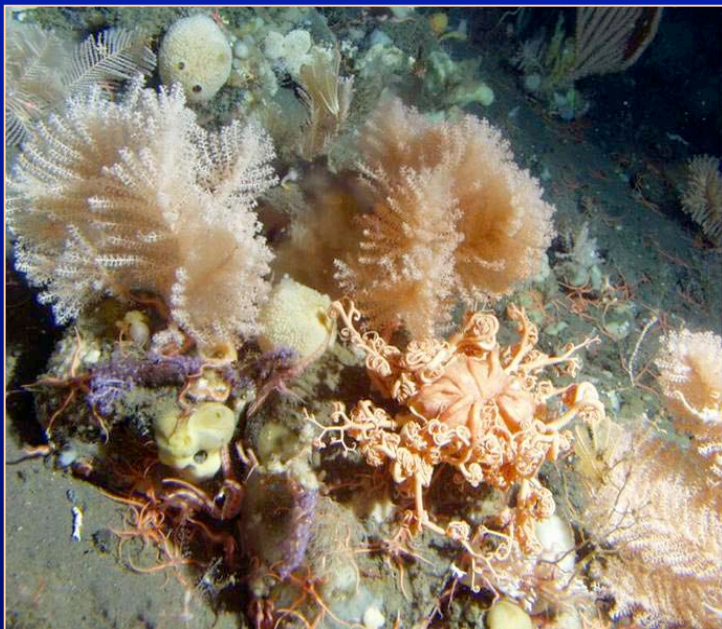
- >450 species of fish
- 26 species of marine mammals
- Millions of seabirds from all 7 continents
- Exquisite coral gardens



Essential Fish Habitat Law and Science

- Sustainable Fisheries Act
 - Describe and Identify
 - Minimize adverse effects
 - Other conservation measures

- National Academy of Science
- Coral Report (Oceana)
- 1100 International Scientists
- 64 PhD Scientist Letter
- Center of Independent Experience
- NMFS Research (“Status Quo”)

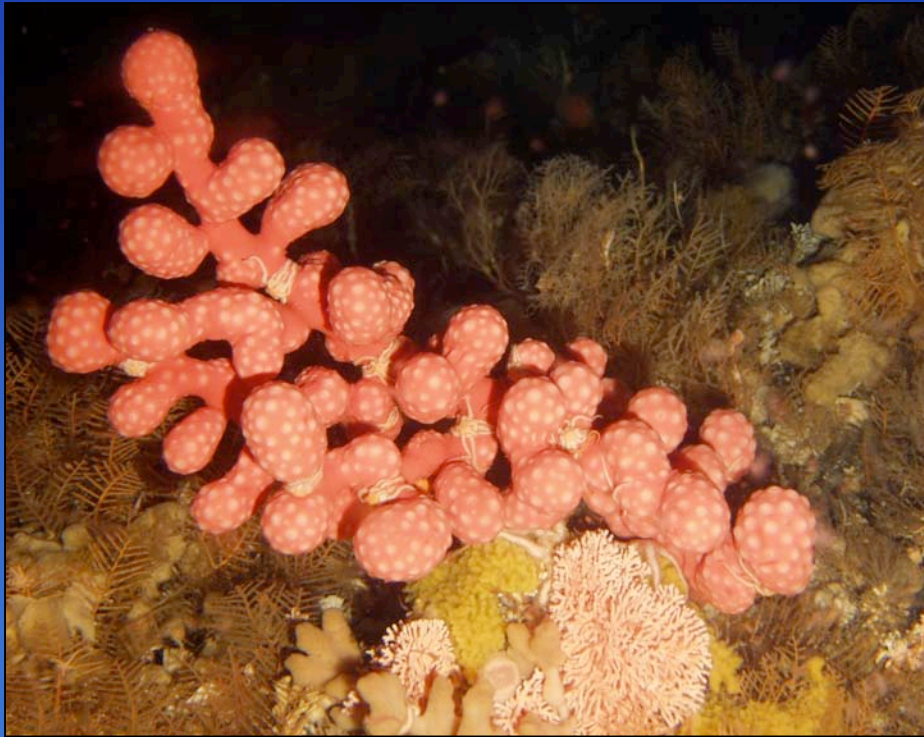


Basket stars, seafan (coral).

“In the Aleutian Islands, corals and sponges may be “keystone species” that by their presence determine benthic fish and invertebrate diversity and abundance.” (Heifetz et al. 2005)

Corals, sponges and other living seafloor substrates provide high quality habitat for a variety of species

- Rockfish
- Mackerel
- Crab
- Shrimp
- Cod
- Sea Stars
- Snails
- Sponges
- Anemones
- Octopus

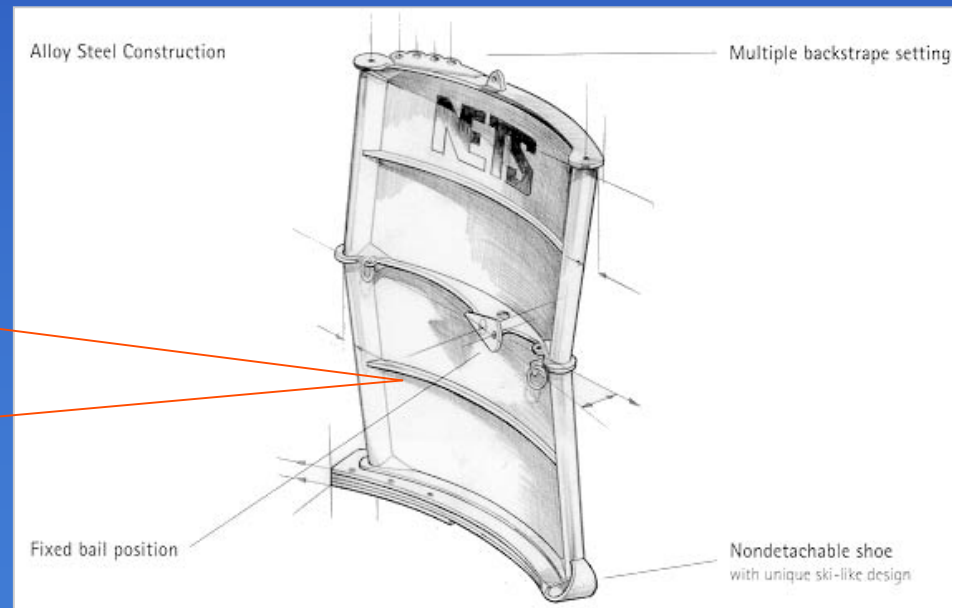
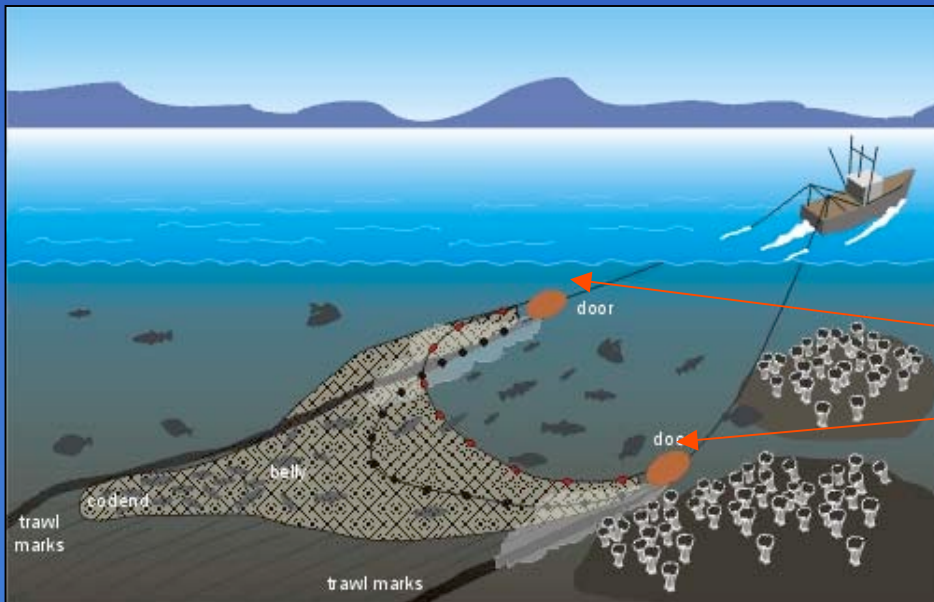


Courtesy NMFS

- Increased habitat complexity
- Shelter and seclusion
- Protection from predators
- Nurseries for juveniles
- Feeding areas
- Spawning grounds

The Threat: Bottom Trawling

- Drag huge nets, tires, and cables on seafloor
- Responsible for 97% of observed coral and sponge bycatch (in Alaska)
- Clear cut the ocean floor



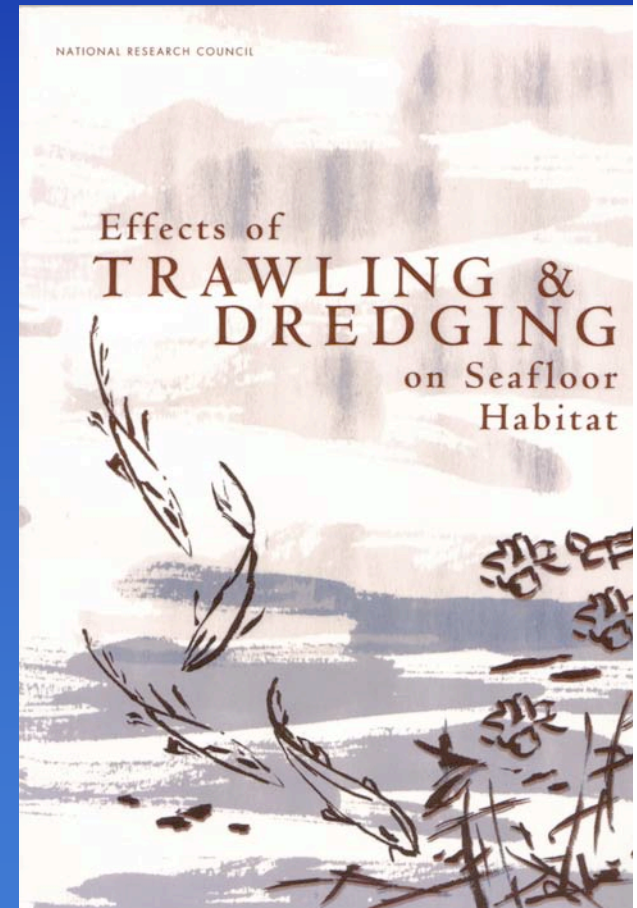
"Canyonbuster" trawl doors – up to 5 tons

National Academy of Sciences Report

Trawling effects on the seafloor

National Research Council 2002

- Bottom trawling reduces the complexity, productivity, and biodiversity of benthic habitats most severely in areas of coral and sponge.
- Three management recommendations
 - Effort Reduction
 - Closures
 - Gear Modifications



Whose Ox Gets Gored? (and how badly...)



Data, Maps, Video, and More Data

The screenshot displays the ArcMap interface with the following components:

- Map View:** A map of the Aleutian Islands with various colored overlays representing different data layers. A legend in the bottom-left of the map area identifies:
 - Red: Coral gardens: does not all bolts contact
 - Green: Area open to bottom trawling
 - Yellow: Area does not bolts trawling
 - Blue: Bottom ridge
- Table of Contents:** A list of layers on the left side of the map, including 'Area open to bottom', '3nm_No_Transit', 'alt_5b_open_final', '541542543_noland', '3nm_No_Transit', 'oceana_mod5b_final', 'Ocean proposed bt a midway', 'Open bt areas compr midderoad', 'oceana_mod5b_final sek', 'Coral gardens (no bo', 'Coral data', 'coral_observer_bycc', 'coral_trawl_survey_', 'Fishery data', and 'all_groundfish_obser'. The 'all_groundfish_obser' layer is expanded to show 'OFFICIAL_T' with categories 'A' and 'A'.
- Attributes of coral_observer_bycatch:** A table with columns: FID, Sh, SPECI, EXTRA, YEAR, HAUL_JOI, GEA, LATITUDE, LONGITUDE. It contains 5 rows of data.
- Attributes of all_groundfish_observer:** A table with columns: VESSELS, HAULS, OFFICIAL_T, SAMPLED_C, PLCK. It contains 17 rows of data.
- Attributes of coral_trawl_survey_A1:** A table with columns: WEIGHT, SPECIES_NIA, COMMON_NIA. It contains 17 rows of data.

Aleutian Bottom Trawl Value (ex-vessel 2002)

- Atka mackerel \$11 million 11 vessels
- Pacific cod \$11 million 30 vessels
- Rockfish \$2.8 million 6 vessels

Total value \$~25 million

Total value AK Groundfish \$565.7 million

Total value for all AK fish \$811 million

Oceana Approach

Goal: Protect habitat while maintaining vibrant fisheries

- Gather and map all information on location of corals and sponges
- Gather and map all information on bottom trawl fishing effort
- Freeze bottom trawl footprint
- Close bottom trawling in areas that have high indication of coral
- Close bottom trawling destruction “hotspot” areas such as gardens, canyons and seamounts
- Enforce bycatch caps for corals and sponges in open areas
- Conduct comprehensive research
 - Benthic mapping
 - Gear impacts research
 - Ecological function, etc.
- Require comprehensive monitoring
 - Onboard observers
 - VMS
 - Electronic logbooks



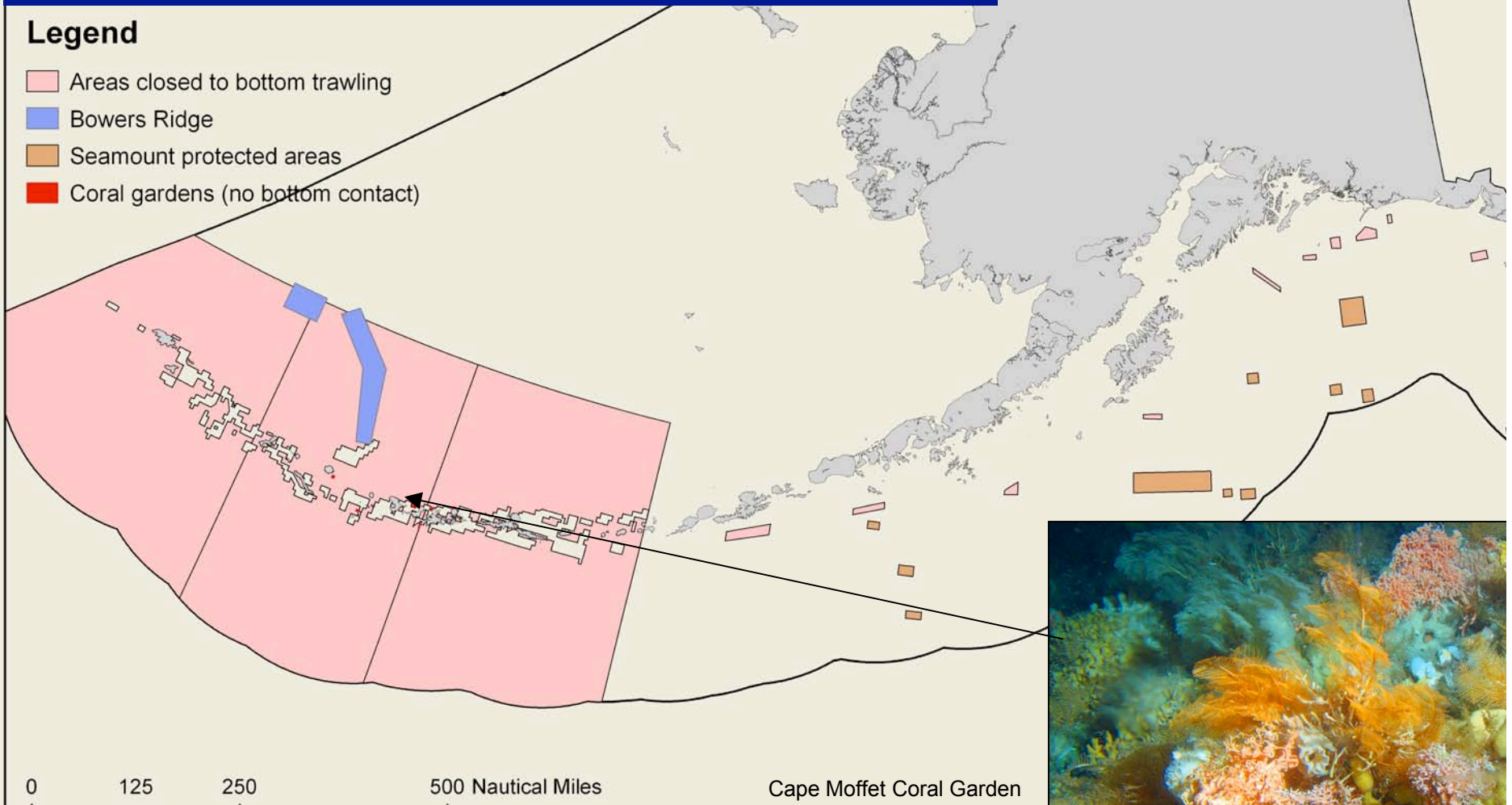


North Pacific FMC action

> 281,000 square miles protected
viable fisheries maintained

Legend

- Areas closed to bottom trawling
- Bowers Ridge
- Seamount protected areas
- Coral gardens (no bottom contact)



0 125 250 500 Nautical Miles Cape Moffet Coral Garden



Cape Moffet Coral Garden



How do we promote sustainable use of our oceans?

- Resource extraction and development that maintain the habitat
- Ecosystem-based management fishing rates
(Ecosystem Sustainable Yields)
- Pollution mitigation and elimination in development
(Mercury, POPs and plastics)
- Sustainable Coastal Development
(Mixing zones)



Protecting the Pacific

Dedicated to protecting Pacific ocean ecosystems, marine life and habitat from pollution and destructive human practices by developing management and scientific tools that provide this and future generations opportunities for sustainable ocean use and healthy seafood. This mission is accomplished through strategic plans using science, law, public education, and advocacy.

